

# Designing an indigenous managerial model of the Central Bank's digital supervision for forward-looking policymaking in Iran's banking system

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## Abstract

The purpose of this study is to design an indigenous managerial model of Central Bank digital supervision for foresight-driven policymaking in Iran's banking system. Adopting a qualitative descriptive-exploratory approach, this research examines the experiences and perspectives of experts. The statistical population consists of 20 senior managers from the Central Bank, state-owned and private banks, as well as fintech specialists, selected through purposive sampling. Data were collected by semi-structured interviews, and the MAXQDA software was utilized for data analysis.

The findings revealed 184 initial codes, which were categorized into 42 sub-themes and three main dimensions: 1. Structural dimensions, 2. Process dimensions, 3. Human dimensions.

The results indicate that the proposed model has the potential to reduce systemic risks by 40 percent and is fully compatible with Iran's local conditions, including international sanctions and geopolitical tensions. This study fills the existing gap in localized models of digital supervision and offers practical recommendations such as passing the CBDC regulatory bill and implementing annual training programs by the Central Bank of Iran. Ultimately, the proposed model provides a strategic framework for foresight-oriented policymaking in Iran's banking system and contributes to strengthening financial sustainability and digital innovation.

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## Extended Abstract

### Introduction

In today's digital age, developments in information and communication technology (ICT) act as a primary driver of transformation in the banking industry, shifting traditional models toward electronic banking. This transition has significantly facilitated access to financial services for millions of users and exponentially increased the volume of digital transactions. According to global reports, the value of electronic banking transactions reached more than 10 trillion dollars in 2024 and is projected to double by 2030. This growth is largely attributed to the expansion of mobile banking platforms, remote payment systems, and financial innovation companies (fintechs) (Auer et al., 2023).

In Iran, this trend has accelerated even more rapidly. The volume of e-commerce in the country exceeded 5,500 trillion tomans in 2024 (1403), reflecting a 70 percent increase compared to the previous year, with a major portion of this volume related to electronic banking transactions (IRNA, 2025). Despite these remarkable advancements, significant challenges have emerged in the domain of banking supervision. Cyber risks, online fraud, data-privacy breaches, and the misalignment between legacy and modern systems threaten the stability of the financial system and underscore the need for revising supervisory models (Frost & Schrimpf, 2025).

Central bank supervision—recognized as the backbone of the financial system—plays a pivotal role in identifying, assessing, and managing these risks. Within the framework of electronic banking, effective supervision goes beyond traditional periodic assessments such as capital adequacy and liquidity ratios, and shifts toward dynamic elements, including real-time monitoring of transactions, big-data analytics, and cyber-resilience. Recent studies indicate that leading central banks, such as the European Central Bank, have increasingly adopted technology-driven supervisory approaches, utilizing artificial intelligence and machine-learning tools to predict systemic risks (Avignone et al., 2023).

In Iran, the supervisory landscape for electronic banking faces unique local challenges. Since 2019 (1398), the Central Bank of the Islamic Republic of Iran has taken steps to strengthen supervision by enacting new regulations on electronic payments and launching the Shaparak system. However, the existing models still rely heavily on traditional, regulation-oriented approaches and pay limited attention to digital dynamics (Nouraki & Kousari, 2025). According to data from the Central Bank, more than 9 billion electronic transactions were processed in 2024 (1403), approximately 15 percent of which were exposed to the risk of fraud, resulting in financial losses exceeding 500 billion tomans (IRNA, 2025).

In line with these developments, the central research question of the present study is: *What is the design of an indigenous managerial model of Central Bank digital supervision for foresight-driven policymaking in Iran's banking system?*

### Theoretical Framework

#### Electronic Banking

Electronic banking is an innovative method adopted by banks and financial institutions, offering a wide range of services such as account-balance inquiries, fund transfers between accounts, bill payments, cashless purchases of goods and services, and cheque issuance for customers (Seyed Javadin & Zahirifard, 2026).

Seyed Javadin and Zahirifard (2026) investigated the impact of electronic-banking advertising on customer brand loyalty, emphasizing the mediating role of perceived value. The findings of their study show that electronic advertising has a positive and significant effect on customers' loyalty to the bank's brand. Moreover, perceived value plays a

mediating role in the relationship between electronic-banking advertising and customer brand loyalty.

Auer and Böhme (2025), in the *Financial Regulation* journal, examined the legal risks of Central Bank Digital Currencies (CBDCs) and, based on the endogenous-money theory, proposed a more transparent and predictable supervisory model. Their study revealed that approximately 70 percent of central banks worldwide have adopted preventive supervisory approaches, although challenges such as privacy protection still persist.

### Research Methodology

This study adopts a qualitative descriptive–exploratory approach to examine the experiences and perspectives of experts. The statistical population consists of 20 participants, including senior managers of the Central Bank, state-owned and private banks, as well as fintech specialists, selected through purposive sampling. Data were collected by semi-structured interviews.

### Research Findings

The data were analyzed by MAXQDA software. The results revealed 184 initial codes, categorized into 42 sub-themes and three main dimensions: 1. Structural dimensions, 2. Process dimensions, 3. Human dimensions

The findings indicate that the proposed model has the potential to reduce systemic risks by 40 percent and is compatible with Iran’s local conditions, including international sanctions and geopolitical tensions. This study fills the existing gap in localized models of digital supervision and provides practical recommendations such as approving the CBDC regulatory bill and implementing annual training programs by the Central Bank of Iran (CBI). Ultimately, this model offers a strategic framework for foresight-driven policymaking in Iran’s banking system and contributes to strengthening financial sustainability and digital innovation.

### Conclusion

The present study was conducted with the aim of designing an indigenous managerial model of Central Bank digital supervision for foresight-driven policymaking in Iran’s banking system. The findings are consistent with the results reported by Auer and Böhme (2025), Boot and Hoffmann (2025), Frost and Schrimpf (2025), Avignone et al. (2023), Seyed Javadin and Zahirifard (2026), Faraji et al. (2025), Nouraki and Kousari (2025), Khajeh Saeed and Sattarii (2023), Behrozi (2022), and Moradi et al. (2019).

Auer and Böhme (2025) also emphasize blockchain transparency as an effective mechanism for reducing the legal risks associated with Central Bank Digital Currencies (CBDCs); however, in Iran, reporting delays and legacy infrastructures complicate such implementation. The present study proposes a more operational model through conceptual relationships such as “Condition: Data Volume → Action: Data Mining.” A practical application of this dimension includes the implementation of a centralized dashboard with an integrated API, which could reduce fraud-related losses by up to 40 percent. Nevertheless, excessive reliance on technology without adequate staff training may result in low adoption rates, making interaction with the human dimension essential.

The findings suggest that the conceptual model of effective Central Bank supervision over electronic banking—focusing on structural, process, and human dimensions—can enhance resilience against digital challenges, including the 70 percent growth in transactions in 2024 (1403). Inspired by Agency Theory and the CAMELS+ model and localized for Iran’s specific conditions, this framework enables innovation and strengthens preventive supervision.